

1 We claim:

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3 37. A nucleotide molecule encoding a modified food allergen whose amino acid  
4 sequence is substantially identical to that of an unmodified food allergen except that at  
5 least one amino acid has been modified in at least one IgE epitope so that IgE binding to  
6 the modified food allergen is reduced as compared with IgE binding to the unmodified  
7 food allergen, the at least one IgE epitope being one that is recognized when the  
8 unmodified food allergen is contacted with serum IgE from an individual that is allergic  
9 to the unmodified food allergen.

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11 38. The nucleotide molecule of claim 37 wherein at least one amino acid has been  
12 modified in all the IgE epitopes of the unmodified food allergen.

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14 39. The nucleotide molecule of claim 37 wherein the at least one IgE epitope is one  
15 that is recognized when the unmodified food allergen is contacted with a pool of sera IgE  
16 taken from a group of at least two individuals that are allergic to the unmodified food  
17 allergen.

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19 40. The nucleotide molecule of claim 37 wherein at least one modified amino acid is  
20 located in the center of the at least one IgE epitope.

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22 41. The nucleotide molecule of claim 37 wherein at least one amino acid in the at  
23 least one IgE epitope of the unmodified food allergen has been modified by substitution.

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25 42. The nucleotide molecule of claim 41 wherein at least one hydrophobic amino acid  
26 in the at least one IgE epitope of the unmodified food allergen has been substituted by a  
27 neutral or hydrophilic amino acid.

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2 43. The nucleotide molecule of claim 37 wherein the modified food allergen activates  
3 T cells.

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5 44. The nucleotide molecule of claim 37 in a vector for expression in a host cell.

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7 45. The nucleotide molecule of claim 37 wherein the modified food allergen is based  
8 on a protein obtained from a source selected from the group consisting of legumes, milks,  
9 grains, eggs, fish, crustaceans, and mollusks.

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11 46. The nucleotide molecule of claim 45 wherein the modified food allergen is based  
12 on a protein obtained from a source selected from the group consisting of wheat, barley,  
13 cow milk, egg, codfish, hazel nut, soybean, and shrimp.

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15 47. A nucleotide molecule encoding a modified peanut allergen whose amino acid  
16 sequence is substantially identical to that of an unmodified peanut allergen except that at  
17 least one amino acid has been modified in at least one IgE epitope so that IgE binding to  
18 the modified peanut allergen is reduced as compared with IgE binding to the unmodified  
19 peanut allergen, the at least one IgE epitope being one that is recognized when the  
20 unmodified peanut allergen is contacted with serum IgE from an individual that is  
21 allergic to the unmodified peanut allergen.

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23 48. The nucleotide molecule of claim 47 wherein at least one amino acid has been  
24 modified in all the IgE epitopes of the unmodified peanut allergen.

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26 49. The nucleotide molecule of claim 47 wherein the at least one IgE epitope is one  
27 that is recognized when the unmodified peanut allergen is contacted with a pool of sera

1 IgE taken from a group of at least two individuals that are allergic to the unmodified  
2 peanut allergen.

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4 50. The nucleotide molecule of claim 47 wherein at least one modified amino acid is  
5 located in the center of the at least one IgE epitope.

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7 51. The nucleotide molecule of claim 47 wherein at least one amino acid in the at  
8 least one IgE epitope of the unmodified peanut allergen has been modified by  
9 substitution.

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11 52. The nucleotide molecule of claim 51 wherein at least one hydrophobic amino acid  
12 in the at least one IgE epitope of the unmodified peanut allergen has been substituted by a  
13 neutral or hydrophilic amino acid.

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15 53. The nucleotide molecule of claim 47 wherein the modified peanut allergen  
16 activates T cells.

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18 54. The nucleotide molecule of claim 47 in a vector for expression in a host cell.

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20 55. The nucleotide molecule of claim 47 wherein the modified peanut allergen is  
21 based on a protein selected from the group consisting of Ara h 1, Ara h 2, and Ara h 3.

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23 56. The nucleotide molecule of claim 37, wherein 1-6 amino acid residues have been  
24 modified in the at least one IgE epitope.

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26 57. The nucleotide molecule of claim 37, wherein 1-5 amino acid residues have been  
27 modified in the at least one IgE epitope.

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58. The nucleotide molecule of claim 37, wherein 1-4 amino acid residues have been modified in the at least one IgE epitope.
59. The nucleotide molecule of claim 37, wherein 1-3 amino acid residues have been modified in the at least one IgE epitope.
60. The nucleotide molecule of claim 37, wherein 1-2 amino acid residues have been modified in the at least one IgE epitope.
61. The nucleotide molecule of claim 37, wherein 1 amino acid residue has been modified in the at least one IgE epitope.
62. The nucleotide molecule of claim 47, wherein 1-6 amino acid residues have been modified in the at least one IgE epitope.
63. The nucleotide molecule of claim 47, wherein 1-5 amino acid residues have been modified in the at least one IgE epitope.
64. The nucleotide molecule of claim 47, wherein 1-4 amino acid residues have been modified in the at least one IgE epitope.
65. The nucleotide molecule of claim 47, wherein 1-3 amino acid residues have been modified in the at least one IgE epitope.

1    66.    The nucleotide molecule of claim 47, wherein 1-2 amino acid residues have been  
2    modified in the at least one IgE epitope.

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4    67.    The nucleotide molecule of claim 47, wherein 1 amino acid residue has been  
5    modified in the at least one IgE epitope.